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United States Patent [19]

Morizuka

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- [54] **HETEROJUNCTION BIPOLAR TRANSISTOR WITH BASE ELECTRODE HAVING SCHOTTKY BARRIER CONTACT TO THE EMITTER**

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61-79253 4/1986 Japan.

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 H01L 29/225
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 257/473
 [58] Field of Search 257/198, 473, 477, 478,
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[57] ABSTRACT

A high-cut-off frequency, high-speed HBT is obtained by suppressing the diffusion of impurities to the utmost by lowering a heat treatment temperature in the step subsequent to the formation of a high concentration base layer. A base electrode for a base layer is made of a metal or an intermetallic compound which extends the emitter layer to reach at least a part of the base layer. The metal or intermetallic compound forms Schottky barrier with an emitter layer having a wide forbidden width, and ohmic contacts with the base layer with a narrow forbidden band. The barrier potential of the Schottky junction formed between the intermetallic compound or metal and the emitter layer is higher than the diffusion potential of a pn junction between the base layer and the emitter layer.

9 Claims, 6 Drawing Sheets

